1.13 REMOTE MONITORING RECEPTACLE AND CIRCUIT

When the remote monitor is connected to the remote monitoring receptacle, Figure 1-1, the following remote circuits are energized.

Circuit	Function
Sockets B to A	Energizes remote cool light
Sockets C to A	Energizes remote defrost light
Sockets D to A	Energizes remote in-range light

Note

The in-range light will be illuminated if the container return air temperature is within 2_C (3.6_F). Refer to paragraph 1.16.n.

1.14 SUCTION SOLENOID VALVE (Model 69NT40)

The suction solenoid valve, shown in Figure 1-3 is controlled by the suction solenoid thermostat (located on the evaporator fan motor deck as shown in Figure 1-2).

In operation, if the return air temperature decreases to −12.2_C (10_F), the suction solenoid thermostat (SST) closes to energize the suction solenoid valve, which opens to increase the refrigerant flow rate and cooling capacity.

The thermostat opens with increasing return air temperature at −7 ¦ 3_C (20 ¦ 6_F) to de-energize the valve.

1.15 FROST FORMATION ON COMPRESSORS

Note

Some models have a thermostatic expansion quench valve, so frost formation on the compressor is not applicable. To see which models use a solenoid quench valve refer to section 5.

Frost may, in normal operation, form on the compressor suction service valve and end bell. This is caused by normal quench valve operation in conjunction with the suction modulation valve. Figure 1-7A shows the allowable frost limit pattern for units operating with the controller set point above −10_C (14_F). This frost pattern is described below.

The temperature controller varies the amount of current through the suction modulation valve coil which in turn increases or decreases the amount of restriction in the suction line, so that the net cooling capacity of the unit will match the cooling required to maintain the load at set point.

When the suction modulation valve is approximately 50% closed (approximately 0.6 amps output to the suction modulation valve coil from the temperature controller), the temperature controller will energize the quench solenoid valve. When the quench valve is opened, a small amount of liquid refrigerant is metered through an orifice (which acts as an expansion device) into the suction line down stream of the suction modulation valve. Because of low compressor suction pressures created by the suction modulation valve, the liquid fed by the quench valve flashes to a low temperature gas and, therefore, the compressor may form frost or ice on the end bell and top of the motor cavity adjacent to the suction gas path of flow. This is not harmful to the compressor, as the restrictor in the quench valve line prevents excessive liquid from flowing into the compressor.

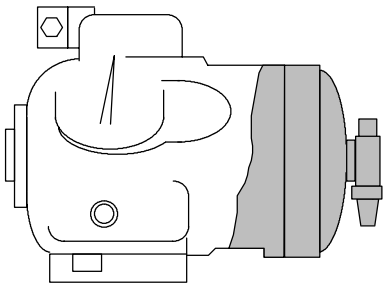

Figure A
Controller Set Above −10_C (14_F)

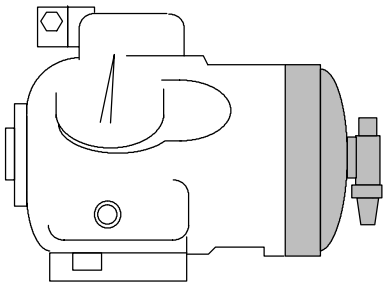

Figure B
Controller Set Below −10_C (14_F)

Figure 1-7. Frost Pattern on Compressors

With the controller set below −10_C (14_F) the allowable compressor frost pattern limit is shown in Figure 1-7B. The frost line will not normally extend beyond the suction service valve as the quench valve should not energize when operating with the controller set point below −10_C (14_F).

If excessive frost is noticed on the compressor and the suction modulation system is operating normally, then the thermal expansion valve superheat setting should be checked. Flooding by a thermal expansion valve may cause oil to foam excessively. Normal quench valve operation will not foam the oil significantly after operation has stabilized.

Adhesive-backed labels depicting allowable frost patterns on compressors are available from Carrier Transicold Replacement Component Group.

1.16 CONTROLLER

h. General Description (See Figure 1-4 or Figure 1-5)

The Carrier Transicold controller is a modular assembly of solid state electronic circuits that combines a number of refrigeration system control functions in a single unit.